**COLORADO DISCHARGE PERMIT SYSTEM (CDPS)**
**FACT SHEET TO PERMIT NUMBER CO0048739**
**BOPCO, L.P., YELLOW CREEK WATER MANAGEMENT FACILITY**
**RIO BLANCO COUNTY**

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## I. TYPE OF PERMIT

**A. Permit Type:** Minor Industrial, New

**B. Discharge To:** Surface Water

## II. FACILITY INFORMATION

**A. SIC Code:** 1311 (Crude Petroleum and Natural Gas)

**B. Facility Classification:** Class A per Section 100.6.2 of the Water and Wastewater Facility Operator Certification Requirements

**C. Facility Location**: CR 20, Meeker, CO
Latitude: 40.02306°N Longitude: 108.33861°W

**D. Permitted Feature:** 001A, samples will be taken after treatment and before discharge into Yellow Creek. 40.02389°N, 108.34278°W

The location(s) provided above will serve as the point(s) of compliance for this permit and are appropriate as they are located after all treatment and prior to discharge to the receiving water.

**E. Facility Flows:** 0.9975 MGD

**F. Major Changes From Last Renewal:**

This is a new permit, and therefore there are no changes to discuss.

| ISSUED | EFFECTIVE | EXPIRATION |
|---|---|---|

## III. RECEIVING STREAM

### A. Waterbody Identification: COLCWH13b, Yellow Creek

### B. Water Quality Assessment:

An assessment of the stream standards, low flow data, and ambient stream data has been performed to determine the assimilative capacities for Yellow Creek for potential pollutants of concern. This information, which is contained in the Water Quality Assessment (PEL) for this receiving stream(s), also includes an antidegradation review, where appropriate. The Division's Permits Section has reviewed the assimilative capacities to determine the appropriate water quality-based effluent limitations as well as potential limits based on the antidegradation evaluation, where applicable. The limitations based on the assessment and other evaluations conducted as part of this fact sheet can be found in Part I.A of the permit.

Permitted Feature 001 will be the authorized discharge point to the receiving stream.

## IV. FACILITY DESCRIPTION

### A. Industry Description

The Yellow Creek WMF treats produced water from oil and gas operations in the nearby Yellow Creek field via OPUS™ II Technology. A full discussion of the treatment is discussed in Part IV.D.

According to 40 CFR 435, "produced water" is the water (brine) brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, and can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.

### B. Sources to the Treatment Plant

The source water is produced water, from the oil and gas extraction process.

### C. Chemical Usage

The permittee stated in the application that they utilize five chemicals in their treatment process. The MSDS sheets have been reviewed and the following chemicals have been approved for use and are summarized in the following table.

**Table IV-1 – Chemical Additives**

| Chemical Name | Purpose | Constituents of Concern |
|---|---|---|
| **Calcium chloride** | **SAR adjustment** | Calcium chloride |
| **Hydrated Lime** | **pH adjustment (softener)** | Calcium hydroxide |
| **Sulfuric Acid** | **pH adjustment** | Sulfuric Acid |
| **Hydrochloric Acid** | **Softener regenerator** | Hydrochloric Acid |

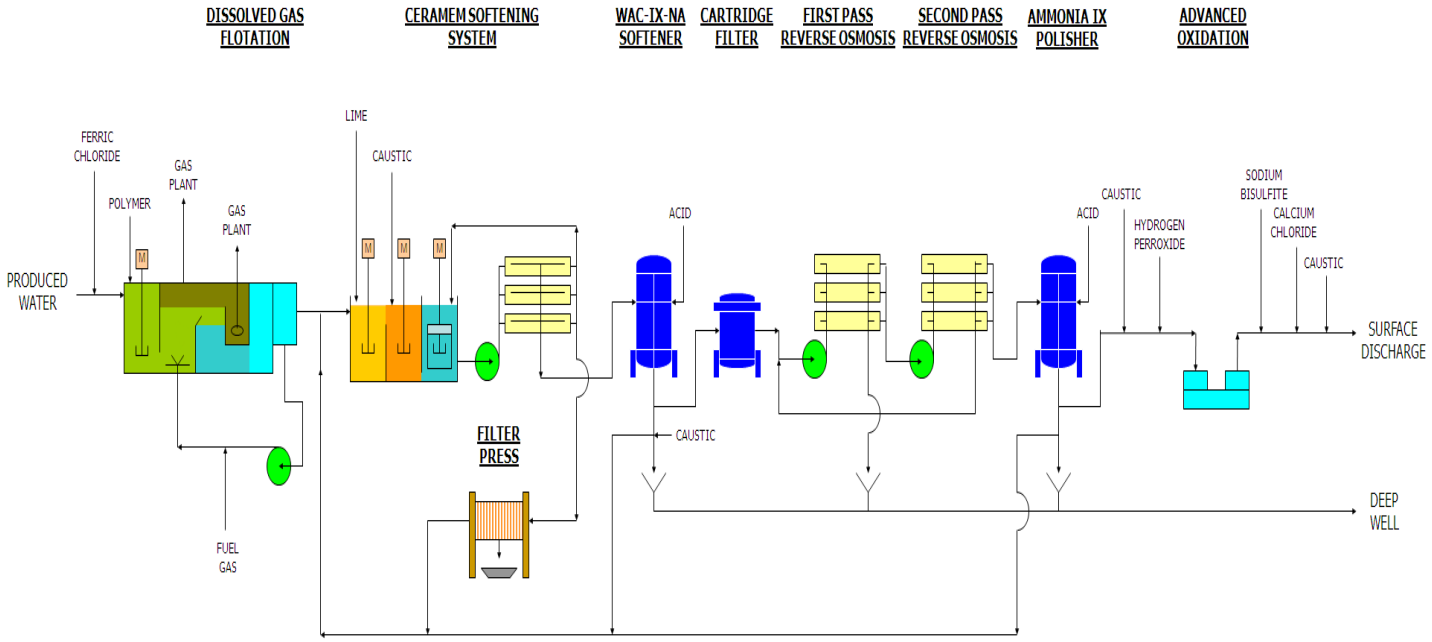
| | | |
|---|---|---|
| **Vitec 4000 NSF** | **Antiscalant/antifoulant** | Sodium hydroxide |

Chemicals deemed acceptable for use in waters that will or may be discharged to waters of the State are acceptable only when used in accordance with all state and federal regulations, and in strict accordance with the manufacturer's site-specific instructions.

### D. Wastewater Treatment Description

Treatment is accomplished with OPUS™ II Technology. OPUS™ II Technology is a multiple treatment process that includes the following:

- Degasification
- Ceramic membrane filtration
- Ion exchange softening
- Cartridge filtration
- Reverse osmosis
- Ammonia polishing




Brine waste will be disposed via deep well injection.

Pursuant to Section 100.6.2 of the Water and Wastewater Facility Operator Certification Requirements, this facility will require a Class A certified operator.

## V. PERFORMANCE HISTORY

### A. Monitoring Data

1. This is a new facility, thus no official discharge monitoring data are available.

2. Additional Data –The following tables summarize data submitted by the permittee for consideration in developing the permit limitations, collected from October 8, 2010 through November 3, 2010.

**Table V-1 – Summary of Additional Data**

| Parameter | Effluent Data | Effluent Data | Effluent Data | Influent data/Effluent Data |
|---|---|---|---|---|
| | **10/8/2010** | **10/25/2010** | **11/1/2010** | **11/3/2010** |
| *E. coli*, #/100 ml | < 1.0 | < 1.0 | < 2.0 | N/A / < 1.0 |
| Nitrate (mg/l) | < 0.045 | < 0.045 | < 0.045 | < 0.90[(2)] / < 0.045 |
| Nitrite (mg/l) | < 0.061 | < 0.061 | < 0.061 | < 6.1[(5)] / < 0.061 |
| T.I.N. (mg/l) | < 0.21 | < 0.21 | < 0.21 | < 7.1 / < 0.21 |
| Ammonia, N (mg/l) | < 0.1 | < 0.1 | 0.17 | 4.4 / 0.13 |
| $CBOD_5$ (mg/l) | - | - | < 10 | 405 / < 10 |
| TSS (mg/l) | < 5 | < 5 | < 5 | 24 / < 5 |
| Oil & grease (mg/l) | < 5 | < 5 | < 5 | 264 / < 5 |
| TDS (mg/l) | 94 | 10 | 62.5 | 9100 / 32 |
| Arsenic, total (µg/l) | < 25 | < 1.6 | < 1.6 | < 25 / < 25 |
| Cadmium, total (µg/l) | < 10 | < 0.2 | < 0.2 | < 10 / < 10 |
| Chromium, total (µg/l) | < 10 | < 4 | < 4 | < 10 / < 10 |
| Copper, total (µg/l) | < 5 | < 4 | < 4 | 112 / < 5 |
| Cyanide, total (µg/l) | < 0.005 | 0.02 | 0.014 | < 0.0050 / 0.016 |
| Iron, total (µg/l) | < 70 | < 80 | < 80 | 2960 / < 70 |
| Lead, total (µg/l) | < 50 | < 1.0 | 1.6 | < 50 / < 50 |
| Manganese, total (µg/l) | < 5 | < 2 | < 2 | 99.4 / < 5 |
| Mercury, total (µg/l) | < 0.1 | < 0.1 | < 0.1 | 0.12 / < 0.1 |
| Nickel, total (µg/l) | < 30 | < 4 | < 4 | < 30 / < 30 |
| Selenium, total (µg/l) | < 50 | < 0.8 | < 0.8 | < 50 / < 50 |
| Silver, total (µg/l) | < 30 | < 0.2 | < 0.2 | < 30 / < 30 |
| Uranium, total (µg/l) | < 50 | < 0.4 | < 0.4 | < 50 / < 50 |
| Zinc, total (µg/l) | < 30 | < 20 | < 20 | 37.0 / < 30 |
| Boron (mg/l) | < 0.05 | < 80 | < 80 | 24,800 / < 0.05 |
| Sulfate (mg/l) | < 0.74 | < 0.5 | < 0.5 | 15.1[(2)] / 0.83 |
| Sulfide (mg/l) | < 0.5 | < 0.5 | < 0.5 | 2.2 / 0.5 |
| Calcium (mg/l) | 14.3 | <2 | 8.05 | 48,800 / 4.61 |
| Magnesium (mg/l) | < 1.0 | < 1.0 | < 1.0 | 4930 / < 1.0 |
| Sodium (mg/l) | 3.21 | < 2 | 13.8 | 3,310,000[(4)] / 11.8 |
| SAR | 0.225 | 0 | 1.29 | 123 / 1.46 |
| Electric Conductivity (dS/m) | 0.0976 | 0.005 | 0.089 | 12 / 0.067 |
| Radium 226 and 228 (pCi/L) | 0.4 | < 0.7 | < 0.7 | 8.3 / < 0.7 |
| Acenaphthene (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |

| Parameter | Effluent Data | Effluent Data | Effluent Data | Influent data/Effluent Data |
|---|---|---|---|---|
| | **10/8/2010** | **10/25/2010** | **11/1/2010** | **11/3/2010** |
| Acrolein (µg/l) | N/A | N/A | N/A | N/A |
| Benzene (µg/l) | 18.3 | 0.35 | < 0.3 | 5370[(1)] / < 0.3 |
| Chloroform (µg/l) | < 0.50 | < 0.50 | < 0.50 | < 200 [(1)] / < 0.50 |
| 4-chloro-3-methylphenol (µg/l) | < 2.5 | < 2.5 | < 2.5 | < 50 [(2)] / < 2.5 |
| Chloronapthalene (µg/l) | < 1.8 | < 1.8 | < 1.8 | < 36 [(2)] / < 1.8 |
| Chlorophenol, 2- (µg/l) | < 1.2 | < 1.2 | < 1.2 | < 24 [(2)] / < 1.2 |
| 1,2-dichloroethane (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 200 [(1)] / < 1.0 |
| 2,4-dichlorophenol (µg/l) | < 1.7 | < 1.7 | < 1.7 | < 34 [(2)] / < 1.7 |
| 2,4-dimethylphenol (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |
| 2,6-dinitrotoluene (µg/l) | < 1.8 | < 1.8 | < 1.8 | < 36 [(2)] / < 1.8 |
| Ethylbenzene (µg/l) | 1.0 | < 0.3 | < 0.3 | 1390[(1)] / < 0.3 |
| Fluoranthene (µg/l) | < 1.2 | < 1.2 | < 1.2 | < 24 [(2)] / < 0.3 |
| Hexachlorobutadiene (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |
| Hexachlorocyclopentadiene (HCCPD) (µg/l) | < 1.8 | < 1.8 | < 1.8 | < 36 [(2)] / < 1.8 |
| Hexachloroethane (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |
| Naphthalene (µg/l) | < 1.0 | < 1.0 | < 1.0 | 419[(2)] / < 1.0 |
| Nitrobenzene (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |
| N-nitrosodiphenylamine (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 20 [(2)] / < 1.0 |
| Pentachlorophenol (µg/l) | < 1.3 | 1.7 | < 1.3 | < 20 [(2)] / < 1.3 |
| Phenol (µg/l) | < 2.2 | < 2.2 | < 2.2 | 1030[(2)] / < 2.2 |
| Toluene (µg/l) | 127 | < 1.0 | < 0.6 | 17200[(1)] / < 1.0 |
| 1,2,4-trichlorobenzene (µg/l) | < 1.8 | < 1.8 | < 1.8 | < 36 [(2)] / < 1.8 |
| 1,1,2-trichloroethane (1,1,2-TCA) (µg/l) | < 1.0 | < 1.0 | < 1.0 | < 100 [(1)] / < 1.0 |
| 2,4,6-trichlorophenol (µg/l) | < 1.7 | < 1.7 | < 1.7 | < 34 [(2)] / < 1.7 |
| Xylene, total (µg/l) | 9.8 | < 0.60 | < 0.6 | 23300 [(1)] / < 0.6 |

* The November 3, 2010 sample set stated that the received samples for the organics had headspace. Headspace in sample bottles allows for potentially erroneously low reported values for VOCs and SVOCs.
[(1)] Diluted by 200x
[(2)] Diluted by 20x
[(3)] Diluted by 2x
[(4)] Diluted by 10x
[(5)] Diluted by 100x
PD means the potentially dissolved fraction, as defined in the Basic Standards and Methodologies for Surface Water (Regulation No.31).
N/A means not sampled

## VI. DISCUSSION OF EFFLUENT LIMITATIONS

### A. Regulatory Basis for Limitations

1. Technology Based Limitations

   a. Federal Effluent Limitation Guidelines – The federal guidelines that apply to this type of facility are found under 40 CFR Part 435, titled Oil and Gas Extraction Point Source Category. The applicable ELGs are found in Section VIII of the PEL. These limitations will typically apply,

unless a more stringent limitation or an alternate limitation that would be protective of the limits shown is applied.

b. Regulation 62: Regulations for Effluent Limitations – These Regulations include effluent limitations that apply to all discharges of wastewater to State waters and are shown in Section VIII of the PEL. These regulations are applicable to the discharge from the BOPCO, L.P. WWTF.

2. Numeric Water Quality Standards - The PEL contains the evaluation of pollutants limited by water quality standards. The mass balance equation shown in Section VI of the PEL was used for most pollutants to calculate the potential water quality based effluent limitations (WQBELs), $M_2$, that could be discharged without causing the water quality standard to be violated. For ammonia, the AMMTOX Model was used to determine the maximum assimilative capacity of the receiving stream. A detailed discussion of the calculations for the maximum allowable concentrations for the relevant parameters of concern is provided in Section V of the PEL developed for this permitting action.

   The maximum allowable effluent pollutant concentrations determined as part of these calculations represent the calculated effluent limits that would be protective of water quality. These are also known as the water quality-based effluent limits (WQBELs). Both acute and chronic WQBELs may be calculated based on acute and chronic standards, and these may be applied as daily maximum (acute) or 30-day average (chronic) limits.

3. Narrative Water Quality Standards - Section 31.11(1)(a)(iv) of The Basic Standards and Methodologies for Surface Waters (Regulation No. 31) includes the narrative standard that State surface waters shall be free of substances that are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.

   a. Agricultural Use Protection –The PEL contains the evaluation of pollutants limited by narrative standards, and specifically sodium absorption ratio (SAR) and electrical conductivity (EC), as outlined by the Division's Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops policy. The mass balance equation shown in Section VI of the PEL was used for electrical conductivity to calculate the maximum allowable effluent concentration, M2, that could be discharged without causing the narrative standard to be violated. The PEL also shows how the limitation for SAR was determined.

   b. Whole Effluent Toxicity - The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for Surface Waters. The requirements for WET testing are being implemented in accordance with Division policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010). Note that this policy has recently been updated and the permittee should refer to this document for additional information regarding WET.

4. Water Quality Regulations, Policies, and Guidance Documents

a. Antidegradation - Since the receiving water is Reviewable , an antidegradation evaluation is required pursuant to Section 31.8 of The Basic Standards and Methodologies for Surface Water. As set forth in Section VII of the PEL, an antidegradation evaluation was conducted for pollutants when water quality impacts occurred and when the impacts were significant. Based on the antidegradation requirements and the reasonable potential analysis discussed above, antidegradation-based average concentrations (ADBACs) may be applied.

According to Division procedures, the facility has three options related to antidegradation-based effluent limits: (1) the facility may accept ADBACs as permit limits (see Section VII of the PEL); (2) the facility may select permit limits based on their non-impact limit (NIL), which would result in the facility not being subject to an antidegradation review and thus the antidegradation-based average concentrations would not apply; or (3) the facility may complete an alternatives analysis as set forth in Section 31.8(3)(d) of the regulations which would result in alternative antidegradation-based effluent limitations.

Considering that the facility was not discharging as of September 30, 2000 and it is a new discharger, NILs are not applicable to this facility.

The effluent must not cause or contribute to an exceedance of a water quality standard and therefore the WQBEL must be selected if it is lower than the ADBAC. Where the WQBEL is not the most restrictive, the ADBAC limits are imposed as two-year average limits.

b. Antibacksliding – As the receiving water is designated Reviewable or Outstanding, and the Division has performed an antidegradation evaluation, in accordance with the Antidegradation Guidance, the antibacksliding requirements in Regulation 61.10 have been met.

c. Determination of Total Maximum Daily Loads (TMDLs) – This stream segment is not on the State's 303(d) list, and therefore TMDLs do not apply.

d. Colorado Mixing Zone Regulations – Pursuant to section 31.10 of The Basic Standards and Methodologies for Surface Water, a mixing zone determination is required for this permitting action. The Colorado Mixing Zone Implementation Guidance, dated April 2002, identifies the process for determining the meaningful limit on the area impacted by a discharge to surface water where standards may be exceeded (i.e., regulatory mixing zone). This guidance document provides for certain exclusions from further analysis under the regulation, based on site-specific conditions.

The guidance document provides a mandatory, stepwise decision-making process for determining if the permit limits will not be affected by this regulation. Exclusion, based on Extreme Mixing Ratios, may be granted if the ratio of the facility design flow to the chronic low flow (30E3) is greater than 2:1 or if the ratio of the chronic low flow to the design flow is greater than 20:1. Since the ratio of the design flow to the chronic low flow is 10:1, the permittee must perform additional studies to determine if further requirements apply.

The remaining threshold tests require site-specific information that is currently not available and thus a determination cannot be made about how the regulation may affect the setting of effluent limits in this permit. Therefore, a compliance schedule is necessary for acquisition of this information, which will be used to complete the testing of exclusion thresholds before the next permit renewal.

e. Salinity Regulations – In compliance with the Colorado River Salinity Standards and the Colorado Discharge Permit System Regulations, the permittee shall monitor for total dissolved solids on a **quarterly** basis. Samples shall be taken at Permitted Feature.

In conformance with section 61.8(2)(l)(i)(A) of the Colorado Discharge Permit System Regulations, the permittee must submit a report that documents whether it is feasible to treat to these levels. The Salinity Regulations allow for the waiver of TDS limitations upon submittal of a report that demonstrates that achievement of zero salt loading or, in the event that is not achievable, discharge of less than one ton per day, is not economically feasible. There is no record that the permittee has previously submitted this report. If a report has previously been submitted, the permittee should submit a copy of this report. Quarterly monitoring for total dissolved solids will continue regardless.

g. Reasonable Potential Analysis – Using the assimilative capacities contained in the PEL, an analysis must be performed to determine whether to include the calculated assimilative capacities as WQBELs in the permit. This reasonable potential (RP) analysis is based on the Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, dated December, 2002. This guidance document utilizes both quantitative and qualitative approaches to establish RP depending on the amount of available data.

A qualitative determination of RP may be made where ancillary and/or additional treatment technologies are employed to reduce the concentrations of certain pollutants. Because it may be anticipated that the limits for a parameter could not be met without treatment, and the treatment is not coincidental to the movement of water through the facility, limits may be included to assure that treatment is maintained.

A qualitative RP determination may also be made where a federal ELG exists for a parameter, and where the results of a quantitative analysis results in no RP. As the federal ELG is typically less stringent than a limitation based on the WQBELs, if the discharge was to contain concentrations at the ELG (above the WQBEL), the discharge may cause or contribute to an exceedance of a water quality standard.

To conduct a quantitative RP analysis, a minimum of 10 effluent data points from the previous 5 years, should be used. The equations set out in the guidance for normal and lognormal distribution, where applicable, are used to calculate the maximum estimated pollutant concentration (MEPC). For data sets with non-detect values, and where at least 30% of the data set was greater than the detection level, MDLWIN software is used consistent with Division guidance to generate the mean and standard deviation, which are then used to establish the multipliers used to calculate the MEPC. If the MDLWIN program cannot be used the Division's guidance prescribes the use of best professional judgment.
Not enough data is available to conduct a quantitative analysis. Therefore, all parameters will be examined using a qualitative RP determination. Each parameter is examined in the following section. Additionally, when influent data are available, the RP determination is conducted on influent data to determine the

## B. Parameter Evaluation

$CBOD_5$ - The $CBOD_5$ concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. Note that $CBOD_5$ limits were imposed in lieu of the $BOD_5$ limits pursuant to the facility's request and in accordance with Section 62.5(6) of the regulations. These limitations are imposed upon the effective date of this permit.

Total Suspended Solids - The TSS concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. These limitations are imposed upon the effective date of this permit.

Oil and Grease –The federal ELG is the limitation that is applied to this discharge. According to Part 62.2(3) of the Regulations for Effluent Limitations "If the Commission has not so promulgated effluent limitation guidelines for any particular industry, but that industry is subject to effluent limitation guidelines promulgated by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act of 1972, the effluent from these industries shall be subject to the applicable EPA guidelines and shall not be subject to the effluent limitations of Regulation 62.4."
This limitation is imposed upon the effective date of this permit.

pH - This parameter is limited by the water quality standards of 6.5-9.0 s.u., as this range is more stringent than other applicable standards. This limitation is imposed upon the effective date of this permit.

*E. coli* –The limitation for *E. coli* is based upon the WQBEL and ADBAC as described in the PEL. The available data was only used to determine exclusion from reporting requirements. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent sample results were non-detect with detection limits as high as 2.0, compared to the WQBELs of 1386/100 ml (7-day geomean) and 693/100 ml (30-day geomean), and 104/100 ml (ADBAC). A qualitative determination of no RP has been made as the potential limitation is significantly greater than the sample results.

Total Residual Chlorine (TRC) - As the facility does not use chlorine for disinfection, a qualitative determination of no RP has been made.

Ammonia - The limitation for ammonia is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values were as high as 0.17 mg/l, which is more than 50% of the lowest ADBAC value of 0.3 mg/l. In addition, the influent sample result was 4.4 mg/l, which is higher than lowest chronic WQBEL of 1.9 mg/l and more than 50% of the lowest acute WQBEL of 6.1 mg/l. A qualitative determination of RP has been made and limitations will be added and imposed upon the effective date of the permit.

Nitrate – The limitation for nitrate is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values of $< 0.9$ mg/l and $< 0.045$ mg/l, respectively, are significantly less than the WQBEL of 107 mg/l (daily maximum) and the ADBAC of 16 mg/l (two year average). Therefore, a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Nitrite – The limitation for nitrate is based upon the WQBEL and ADBAC as described in the PEL.

A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values are 6.1 mg/l and < 0.061 mg/l, respectively. In comparison to the WQBEL of 0.053 mg/l (daily maximum) and the ADBAC of 0.008 mg/l (two year average), both sample type results are greater than the WQBEL and the ADBAC. Therefore a qualitative finding of RP has been determined and limitations and monitoring have been added to the permit.

Total Inorganic Nitrogen - The limitation for T.I.N is based upon the WQBEL as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values were <7.1 mg/l and < 0.21 mg/l, respectively. In comparison to the WQBEL of 113 mg/l (daily maximum), the sample results are significantly less than the WQBEL. Therefore, a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Total Arsenic – The limitation for total arsenic is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values were as high as < 25 µg/l. In comparison to the WQBEL of 110 µg/l (30-day average) and the ADBAC of 17 µg/l (two year average), the sample results are less than 50% of the WQBEL but larger than the ADBAC. Therefore a qualitative finding of RP has been determined for the ADBAC; reporting requirements for the 30 day average and limitations for the ADBAC have been added to the permit.

Dissolved Arsenic – The limitation for dissolved arsenic is based upon the WQBEL and ADBAC as described in the PEL. The available data was only used to determine exclusion from reporting requirements. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values for total arsenic of < 25 µg/l are significantly less than the WQBEL of 362 ug/l (daily maximum) and the ADBAC of 58 ug/l (two year average). Therefore, a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Potentially Dissolved Cadmium – The limitation for potentially dissolved cadmium is based upon the WQBEL and ADBAC as described in the PEL. The available data was only used to determine exclusion from reporting requirements. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values for total cadmium ranged from <0.2 µg/l to < 10 µg/l. The WQBELs for potentially dissolved cadmium are 9.7 µg/l (daily maximum) and 1.3 µg/l (30 day average). The ADBAC is 1 µg/l (two year average). Considering all of the sample results were non-detect and half of the sample results had detection limits of 0.2 µg/l, a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Potentially Dissolved Trivalent Chromium – The limitation for potentially dissolved trivalent chromium is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values for total chromium ranged from < 4 µg/l to < 10 µg/l. The WQBELs for potentially dissolved trivalent chromium are 1891 µg/l (daily maximum) and 254 µg/l (30 day average). The ADBAC is 39 µg/l (two year average). Considering all of the sample results were non-detect and significantly less than the proposed limitations, a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Dissolved Hexavalent Chromium – The limitation for dissolved hexavalent chromium is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values for total chromium ranged from < 4 µg/l to < 10 µg/l. The WQBELs for potentially dissolved trivalent chromium are 17 µg/l (daily maximum) and 12 µg/l (30 day average). The ADBAC is 1.9 µg/l (two year average). All detection limits were greater than the ADBACs, and therefore a qualitative determination of RP has been made. Reporting requirements for the 30 day average and daily maximum, and limitations for the ADBAC have been added to the permit.

Potentially Dissolved Copper – The limitation for potentially dissolved copper is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total copper ranged from < 4 µg/l to < 5 µg/l. The WQBELs for potentially dissolved copper are 53 µg/l (daily maximum) and 32 µg/l (30 day average). The ADBAC is 4.8 µg/l (two year average). The lowest of the detection limits were greater than 50% the ADBACs, and therefore a qualitative determination of RP has been made. Additionally, the influent sample data reported a concentration of total copper of 112 µg/l. Reporting requirements for the 30 day average and daily maximum, and limitations for the ADBAC have been added to the permit.

Cyanide – The limitation for free cyanide is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Influent and effluent values for total cyanide ranged from < 0.005 µg/l to < 0.02 µg/l. The WQBEL for free cyanide is 5.3 µg/l (daily maximum) and the ADBAC is 0.8 µg/l (two year average). Considering all of the sample results were non-detect and significantly less than the proposed limitations, a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Total Recoverable Iron – The limitation total recoverable iron cyanide is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total iron ranged from < 70 µg/l to < 80 µg/l. The WQBEL for total recoverable iron is 1085 µg/l (30 day average) and the ADBAC is 295 µg/l. Considering all of the sample results were non-detect and significantly less than the proposed limitations, a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Potentially Dissolved Lead – The limitation of potentially dissolved lead is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total lead ranged from < 1 µg/l to < 50 µg/l, including one detected value at 1.6 µg/l. The WQBELs for potentially dissolved lead are 300 µg/l (daily maximum) and 12 µg/l (30 day average). The ADBAC is 1.9 µg/l (two year average). Considering a sample result is greater than 50% of the ADBAC, a qualitative determination has been made. Reporting requirements for the 30 day average and daily maximum, and limitations for the ADBAC have been added to the permit.

Potentially Dissolved Manganese – The limitation of potentially dissolved manganese is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total manganese ranged from < 2 µg/l to < 5 µg/l. The WQBELs for potentially dissolved manganese are 5049 µg/l (daily maximum) and 2872 µg/l (30 day average). The ADBAC is 496 µg/l (two year average). Despite the fact that the

influent sample result was 99.4 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Total Mercury – The limitation total mercury lead is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. The effluent value for total mercury is < 0.1 µg/l. The WQBEL for total mercury is 0.011 µg/l (30 day average). The ADBAC is 0.0017 µg/l (two year average). Considering the non-detect values are greater than the proposed limitations, a qualitative determination of RP has been made and limitations have been added to the permit.

Potentially Dissolved Nickel – The limitation of potentially dissolved nickel is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total nickel ranged from < 4 µg/l to < 30 µg/l. The WQBELs for potentially dissolved nickel are 1709 µg/l (daily maximum) and 201 µg/l (30 day average). The ADBAC is 30 µg/l (two year average). All of the sample results were non-detect and half of the sample results had detection limits of 4 µg/l, which is less than half of the ADBAC. Therefore a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Potentially Dissolved Selenium – The limitation of potentially dissolved selenium is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total selenium ranged from < 0.8 µg/l to < 50 µg/l. The WQBELs for potentially dissolved selenium are 20 µg/l (daily maximum) and 4.6 µg/l (30 day average). The ADBAC is 4.5 µg/l (two year average). All of the sample results were non-detect and half of the sample results had detection limits of 0.8 µg/l, which is less than half of the ADBAC. Therefore a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Potentially Dissolved Silver – The limitation of potentially dissolved silver is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total silver ranged from < 0.2 µg/l to < 30 µg/l. The WQBELs for potentially dissolved silver are 25 µg/l (daily maximum) and 4.2 µg/l (30 day average). The ADBAC is 0.63 µg/l (two year average). All of the sample results were non-detect and half of the sample results had detection limits of 0.2 µg/l, which is less than half of the ADBAC. Therefore a qualitative determination of no RP has been made; limitations and monitoring are not necessary at this time.

Potentially Dissolved Zinc – The limitation of potentially dissolved zinc is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total zinc ranged from < 20 µg/l to < 30 µg/l. The WQBELs for potentially dissolved zinc are 493 µg/l (daily maximum) and 439 µg/l (30 day average). The ADBAC is 122 µg/l (two year average). Despite the fact that the influent sample result was 37 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Dissolved Uranium – The limitation of dissolved uranium is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for total uranium ranged from < 0.4 µg/l to < 50 µg/l. The WQBELs for potentially dissolved zinc are 11,808 µg/l (daily maximum) and 7607 µg/l (30 day

average). The ADBAC is 1141 µg/l (two year average). All of the sample results were non-detect and significantly less than the potential limitations, therefore a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Boron – The limitation of boron is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for boron ranged from < 0.05 mg/l to < 80 mg/l. The WQBEL for boron is 5.5 mg/l (30 day average). The ADBAC is 0.83 mg/l (two year average). However, the influent sample result was 24,800 mg/l, which is significantly higher than the proposed limitations. Based on the influent boron value, a qualitative determination of RP has been made. Limitations have been added to the permit.

Sulfide – The limitation of sulfide is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent value for sulfide was < 0.5 mg/l. The WQBEL for sulfide is 0.0022 mg/l (30 day average). The ADBAC is 0.00033 mg/l (two year average). However, the influent sample result was 2.2 mg/l, which is significantly higher than the proposed limitations. Based on the influent sulfide value, a qualitative determination of RP has been made. Limitations have been added to the permit.

Acenaphthene – The limitation of acenaphthene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent value for acenaphthene was < 1.0 µg/l. The WQBELs for acenaphthene are 1813 µg/l (daily maximum) and 572 µg/l (30 day average). The ADBAC is 86 µg/l (two year average). All of the sample results were non-detect and significantly less than the potential limitations, therefore a qualitative determination of no RP has been made. Limitations and monitoring are not necessary at this time.

Acrolein – The limitation of acrolein is based upon the WQBEL and ADBAC as described in the PEL. There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Benzene – The limitation of benzene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for benzene were as high as 18.3 µg/l. The WQBEL for benzene is 5653 µg/l (daily maximum) and the ADBAC is 848 µg/l (two year average). However, the influent sample result was 5370 µg/l, which is higher than the ADBAC limitation and more than 50% of the WQBEL limitation. Based on the influent benzene value, a qualitative determination of RP has been made. Reporting requirements for daily maximum and 30 day averages, and ADBAC limitations have been added to the permit.

Chloroform – The limitation of chloroform is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for chloroform were < 0.50 µg/l. The WQBELs for chloroform are 30,827 µg/l (daily maximum) and 1364 µg/l (30 day average). The ADBAC is 205 µg/l (two year average). However, the influent sample result was < 200 µg/l, which greater than 50% of the ADBAC limitation. Based on the influent chloroform value, a qualitative determination of RP has been made. Reporting requirements for daily maximum and 30 day averages, and ADBAC limitations have been added to the permit.

4-chloro-3-methylphenol – The limitation of 4-chloro-3-methylphenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 4-chloro-3-methylphenol were < 2.5 µg/l. The WQBEL for 4-chloro-3-methylphenol is 32 µg/l (daily maximum). The ADBAC is 4.8 µg/l (two year average). However, the influent sample result was < 50 µg/l, which greater than 50% of the proposed limitations. Based on the influent 4-chloro-3-methylphenol value, a qualitative determination of RP has been made. Limitations have been added to the permit.

Chloronaphthalene – The limitation of chloronaphthalene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for chloronaphthalene were < 1.8 µg/l. The WQBELs for chloronaphthalene are 2453 µg/l (daily maximum) and 682 µg/l (30 day average). The ADBAC is 102 µg/l (two year average). Despite the fact that the influent sample result was < 36 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Chlorophenol, 2- – The limitation of 2-chlorophenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 2-chlorophenol were < 1.2 µg/l. The WQBELs for 2-chlorophenol are 4672 µg/l (daily maximum) and 2200 µg/l (30 day average). The ADBAC is 330 µg/l (two year average). Despite the fact that the influent sample result was < 24 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

1,2-dichloroethane – The limitation of 1,2-dichloroethane is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 1,2-dichloroethane were < 1.0 µg/l. The WQBELs for 1,2-dichloroethane are 125,867 µg/l (daily maximum) and 22,000 µg/l (30 day average). The ADBAC is 3300 µg/l (two year average). Despite the fact that the influent sample result was < 200 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

2,4-dichlorophenol – The limitation of 2,4-dichlorophenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 2,4-dichlorophenol were < 1.7 µg/l. The WQBELs for 2,4-dichlorophenol are 2155 µg/l (daily maximum) and 401.5 µg/l (30 day average). The ADBAC is 61 µg/l (two year average). However, the influent sample result was < 34 µg/l, which greater than 50% of the proposed limitations. Based on the influent 2,4-dichlorophenol value, a qualitative determination of RP has been made. Limitations have been added to the permit.

2,4-dimethylphenol – The limitation of 2,4-dimethylphenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 2,4-dimethylphenol were < 1.0 µg/l. The WQBEL for 2,4-dimethylphenol is 2261 µg/l (daily maximum). The ADBAC is 339 µg/l (two year average). Despite the fact that the influent sample result was < 20 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

2,6-dinitrotoluene – The limitation of 2,6-dinitrotoluene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 2,6-dinitrotoluene were < 1.8 µg/l. The WQBELs for 2,6-dinitrotoluene are 352 µg/l (daily maximum) and 253 µg/l (30 day average). The ADBAC is 39 µg/l (two year average). However, the influent sample result was < 36 µg/l, which greater than 50% of the ADBAC limitations. Based on the influent 2,6-dinitrotoluene value, a qualitative determination of RP has been made. Reporting requirements for daily maximum and 30 day averages, and ADBAC limitations have been added to the permit.

Ethylbenzene – The limitation of ethylbenzene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for ethylbenzene were as high as 1.0 µg/l. The WQBEL for ethylbenzene is 34,133 µg/l (daily maximum) and the ADBAC is 5120 µg/l (two year average). Despite the fact that the influent sample result was 1390 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Fluoranthene – The limitation of fluoranthene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for fluoranthene were as high as < 1.2 µg/l. The WQBEL for fluoranthene is 4255 µg/l (daily maximum) and the ADBAC is 637 µg/l (two year average). Despite the fact that the influent sample result was < 24 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Hexachlorobutadiene – The limitation of hexachlorobutadiene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for hexachlorobutadiene were < 1.0 µg/l. The WQBELs for hexachlorobutadiene are 96 µg/l (daily maximum) and 10 µg/l (30 day average). The ADBAC is 1.5 µg/l (two year average). The effluent sample results of < 1.0 µg/l is greater than 50% of the ADBAC limitation. Additionally, the influent sample result was < 20 µg/l, which greater than the 30 day average and ADBAC limitations. Therefore, a qualitative determination of RP has been made. Reporting requirements for daily maximum, and 30 day average and ADBAC limitations have been added to the permit.

Hexachlorocyclopentadiene (HCCPD) – The limitation of HCCPD is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for HCCPD were < 1.8 µg/l. The WQBELs for HCCPD are 7.5 µg/l (daily maximum) and 5.5 µg/l (30 day average). The ADBAC is 0.83 µg/l (two year average). The effluent sample results of < 1.0 µg/l is greater than the ADBAC limitation. Additionally, the influent sample result was < 36 µg/l, which greater than all proposed limitations. Therefore, qualitative determination of RP has been made. Limitations have been added to the permit.

Hexachloroethane – The limitation of hexachloroethane is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for hexachloroethane were < 1.0 µg/l. The WQBELs for hexachloroethane are 1045 µg/l (daily maximum) and 594 µg/l (30 day average). The ADBAC is 89 µg/l (two year average). Despite the fact that the influent sample result was < 36 µg/l, the influent and effluent results are significantly less than the proposed limitations. Therefore limitations and monitoring are not necessary at this time.

Naphthalene – The limitation of naphthalene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for naphthalene were < 1.0 µg/l. The WQBELs for naphthalene are 2453 µg/l (daily maximum) and 682 µg/l (30 day average). The ADBAC is 102 µg/l (two year average). However, the influent sample result was 419 µg/l, which greater than the ADBAC limitations and greater than 50% of the 30 day average. Based on the influent naphthalene value, a qualitative determination of RP has been made. Reporting requirements for daily maximum, and 30 day average and ADBAC limitations have been added to the permit.

Nitrobenzene – The limitation of nitrobenzene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for nitrobenzene were < 1.0 µg/l. The WQBEL for nitrobenzene is 28,800 µg/l (daily maximum) and 594 µg/l (30 day average). The ADBAC is 4320 µg/l (two year average). The influent sample result was < 20 µg/l. The influent and effluent results are significantly less than the proposed limitations, therefore limitations and monitoring are not necessary at this time.

Pentachlorophenol – The limitation of pentachlorophenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for pentachlorophenol were as high as 1.7 µg/l. The WQBELs for pentachlorophenol are 20.3 µg/l (daily maximum) and 16.5 µg/l (30 day average). The ADBAC is 2.5 µg/l (two year average). The effluent values is greater than 50% of the ADBAC limitation. Additionally, the influent sample result was < 20 µg/l, which greater than the 30 day average and ADBAC limitations and greater than 50% of the daily maximum limitation. Based on the influent pentachlorophenol value, a qualitative determination of RP has been made. Limitations have been added to the permit.

Phenol – The limitation of phenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for phenol were < 2.2 µg/l. The WQBELs for phenol are 10,880 µg/l (daily maximum) and 2816 µg/l (30 day average). The ADBAC is 422 µg/l (two year average). However, the influent sample result was 1030 µg/l, which greater than the ADBAC limitations and greater than 50% of the 30 day average. Based on the influent phenol value, a qualitative determination of RP has been made. Reporting requirements for daily maximum, and 30 day average and ADBAC limitations have been added to the permit.

Toluene – The limitation of toluene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for toluene were as high as 127 µg/l. The WQBEL for toluene is 2625 µg/l (daily maximum) and the ADBAC is 2800 µg/l (two year average). However, the influent sample result was 17,200 µg/l, which is greater than the proposed limitations. Based on the influent toluene value, a qualitative determination of RP has been made. Limitations have been added to the permit.

1,2,4-trichlorobenzene – The limitation of 1,2,4-trichlorobenzene is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 1,2,4-trichlorobenzene were < 1.8 µg/l. The WQBEL for 1,2,4-trichlorobenzene is 267 µg/l (daily maximum) and 55 µg/l (30 day average). The ADBAC is 8.3 µg/l (two year average). However, the influent sample result was < 36 µg/l, which greater than the ADBAC limitations and greater than 50% of the 30 day average. Based on the influent

1,2,4-trichlorobenzene value, a qualitative determination of RP has been made. Reporting requirements for daily maximum, and 30 day average and ADBAC limitations have been added to the permit.

1,1,2-trichloroethane (1,1,2-TCA) – The limitation of 1,1,2-TCA is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 1,1,2-TCA were < 1.0 µg/l. The WQBEL for 1,1,2-TCA is 10,027 µg/l (daily maximum) and the ADBAC is 1504 µg/l (two year average). The influent sample result was < 100 µg/l. The influent and effluent results are significantly less than the proposed limitations, therefore limitations and monitoring are not necessary at this time.

2,4,6-trichlorophenol – The limitation of 2,4,6-trichlorophenol is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for 2,4,6-trichlorophenol were < 1.7 µg/l. The WQBEL for 2,4,6-trichlorophenol is 1067 µg/l (30-day average) and the ADBAC is 161 µg/l (two year average). The influent sample result was < 34 µg/l. The influent and effluent results are significantly less than the proposed limitations, therefore limitations and monitoring are not necessary at this time.

Radium 226 and 228 – The limitation of radium is based upon the WQBEL and ADBAC as described in the PEL. A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent values for radium 226 and 228 were as high as 0.4 pCi/l. The WQBEL for radium 226 and 228 is 5.3 pCi/l (daily maximum) and the ADBAC is 0.81pCi/l (two year average). The effluent is 50% of the proposed ADBAC limitation. Additionally, the influent sample result was 8.3 pCi/l. The influent is significantly higher than the proposed limitations. Therefore, limitations are included in the permit.

Temperature – The MWAT is the maximum weekly average temperature, as determined by a seven day rolling average, using at least 3 equally spaced temperature readings in a 24-hour day (at least every 8 hours for a total of at least 21 data points).

There is no data available regarding the presence/absence or quantification of this parameter in the discharge. A qualitative RP determination has been made because raw produced water is expected to have elevated temperature measurements. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

The daily maximum is defined as the maximum 2 hour average, with a minimum of 12 equally spaced measurements throughout the day. As both of these temperature requirements will likely require the use of automated temperature measurements and recordings, the permittee must have the proper equipment installed before commencement of discharge.

As it is unknown whether the facility can meet the new temperature limitation, or whether there is reasonable potential for the facility to cause or contribute to an exceedance of the water quality standard for temperature, report only conditions will be required for the duration of this permit. Upon the next permit renewal, the collected temperature data will be used to determine if there is reasonable potential, and/or if the permittee can meet the limitation.

As continuous ambient water quality data, in accordance with the definition of the standard, is not available, the permittee is encouraged to collect instream data on a continuous basis. This data may be used during the next permit renewal, so that the assimilative capacity of the receiving water (if

applicable) can be calculated and used to determine a limitation based on the streams dilution potential. If such data is not available, the Division will likely set the limitation at the water quality standard (i.e. end of pipe limit, no dilution).

Electrical Conductivity (EC) – The calculated chronic limit for EC in deciSiemens per meter (dS/m), as set out in the PEL, is established as a 30-day average limit. The limitation is set at 3.1 dS/m. The influent has a result of 12 dS/m, which is higher than the proposed limit. Further, the treated effluent has results as low as 0.005 dS/m, which is well below the minimum EC limit of 0.36 dS/m. Therefore, a qualitative determination of RP has been made and limitations will be included in the permit.

In order to comply with the minimum electrical conductivity limit of 0.36 dS/m for the plant discharge, the calcium chloride feed setpoint will be increased so that the minimum EC required by the permit is maintained. Per the current design, calcium chloride is added to the discharge to comply with the minimum SAR requirement.

This limitation is imposed upon the effective date of the permit.

Sodium Absorption Ratio (SAR), Adjusted SAR – The capped limit for SAR is set out in the PEL, and is established as a 30-day average limit. Note that the SAR limit may change based on the actual EC of the effluent, as based on the SAR/EC equation (SAR = (7.1 * EC) – 2.48), which is the limitation expressed in the permit. Note that the maximum SAR is capped at the value of the SAR/EC equation using the EC limit calculated in the PEL or 9, whichever is less.

High bicarbonate concentrations also adversely affect plant growth because bicarbonate combines with calcium and magnesium and will precipitate out of solution, lowering the amount of available calcium. For this reason, the effluent SAR will be calculated as the adjusted SAR, which takes into account the amount of bicarbonate in the effluent. The SAR limit is expressed as a Pass/Fail limit, and the permittee will be required to determine the SAR limit based on the above equation. The permittee will report the adjusted SAR of the effluent, and determine whether this value meets the allowable SAR as determined by the equation (or the capped value).

The capped limit for SAR is 7.0. The influent has a result of 123, which is higher than the proposed SAR cap. Therefore, a qualitative determination of RP has been made and limitations will be included in the permit.

This limitation is imposed upon the effective date of the permit.

Reporting of the effluent Ca, Mg, Na, and HCO3 will be required for confirmation of calculations. See the Definitions of Terms Section of the permit (Part I.C) for detailed instructions on how to calculate the adj SAR using the $HCO_3$ and Ca concentrations.

Whole Effluent Toxicity (WET) Testing – Due to the fact that this is an industrial facility that treats wastewater from natural gas operations that has a number of toxic pollutants of concern, a qualitative determination of RP has been made.

1. In-Stream Waste Concentration (IWC) – Where monitoring or limitations for WET are deemed appropriate by the Division, the chronic in-stream dilution is critical in determining whether acute or chronic conditions shall apply. In accordance with Division policy, for those discharges where the chronic IWC is greater than 9.1% and the receiving stream has a Class 1 Aquatic Life use or Class 2

Aquatic Life use with all of the appropriate aquatic life numeric standards, chronic conditions will normally apply. Where the chronic IWC is less than or equal to 9.1, or the stream is not classified as described above, acute conditions will normally apply. The chronic IWC is determined using the following equation:

IWC = [Facility Flow (FF)/(Stream Chronic Low Flow (annual) + FF)] X 100%

The flows and corresponding IWC for the appropriate discharge point are:

| Permitted Feature | Chronic Low Flow, 30E3 (cfs) | Facility Design Flow (cfs) | IWC, (%) |
|---|---|---|---|
| 001A | 0.15 | 1.5 | 91 |

The IWC for this permit is 91%, which represents a wastewater concentration of 91% effluent to 9% receiving stream.

2. General Information – The permittee should read the WET testing section of Part I of the permit carefully, as this information has been updated in accordance with the Division's updated policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010) . The permit outlines the test requirements and the required follow-up actions the permittee must take to resolve a toxicity incident. The permittee should also read the above mentioned policy which is available on the Permit Section website. The permittee should be aware that some of the conditions outlined above may be subject to change if the facility experiences a change in discharge, as outlined in Part II.A.2. of the permit. Such changes shall be reported to the Division immediately.

B. Parameter Speciation

For standards based upon the total and total recoverable methods of analysis, the limitations are based upon the same method as the standard.

For total recoverable arsenic, the analysis may be performed using a graphite furnace, however, this method may produce erroneous results and may not be available to the permittee. Therefore, the total method of analysis will be specified instead of the total recoverable method.

Until recently there has not been an effective method for monitoring low-level total mercury concentrations in either the receiving stream or the facility effluent. To ensure that adequate data are gathered to show compliance with the limitation and consistent with Division initiatives for mercury, quarterly effluent monitoring for total mercury at low-level detection methods will be required by the permit.

For metals with aquatic life-based dissolved standards, effluent limits and monitoring requirements are typically based upon the potentially dissolved method of analysis, as required under Regulation 31, Basic Standards and Methodologies for Surface Water. Thus, effluent limits and/or monitoring requirements for these metals will be prescribed as the "potentially dissolved" form.

For hexavalent chromium, samples must be unacidified. Accordingly, dissolved concentrations will be measured rather than potentially dissolved concentrations.

## VII. ADDITIONAL TERMS AND CONDITIONS

### A. Monitoring

Effluent Monitoring – Effluent monitoring will be required as shown in the permit document. Refer to the permit for locations of monitoring points. Monitoring requirements have been established in accordance with the frequencies and sample types set forth in the Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities. This policy includes the methods for reduced monitoring frequencies based upon facility compliance as well as for considerations given in exchange for instream monitoring programs initiated by the permittee.

This facility is not eligible for reduced monitoring as it is a new facility.

### B. Reporting

1. Discharge Monitoring Report – The BOPCO, L.P. facility must submit Discharge Monitoring Reports (DMRs) on a monthly basis to the Division. These reports should contain the required summarization of the test results for all parameters and monitoring frequencies shown in Part I.B of the permit. See the permit, Part I.B, C, D and/or E for details on such submission.

2. Special Reports – Special reports are required in the event of an upset, bypass, or other noncompliance. Please refer to Part II.A. of the permit for reporting requirements. As above, submittal of these reports to the US Environmental Protection Agency Region VIII is no longer required.

### C. Signatory and Certification Requirements

Signatory and certification requirements for reports and submittals are discussed in Part I.E.6. of the

### D. Compliance Schedules

The following compliance schedules are included in the permit. See Part I.B of the permit for more information.

- Mixing Zone Study: Time given to conduct a mixing zone analysis.

All information and written reports required by the following compliance schedules should be directed to the Permits Section for final review unless otherwise stated.
permit.

### D. Stormwater

Pursuant to 5 CCR 1002-61.4(3)(b)(i)(C), the operator of an existing or new discharge composed entirely of stormwater from an oil and gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a permit application, unless the facility:

- has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or
- has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or
- contributes to a violation of a water quality standard.

The stormwater discharge permit applicable to such oil and gas facilities is the CDPS General Permit for Stormwater Discharges Associated with Light Industrial Activities. BOPCO LP must submit a permit application for discharges of stormwater from the Yellow Creek Water Management Facility that meet any of the above criteria.

### E. Economic Reasonableness Evaluation

Section 25-8-503(8) of the revised (June 1985) Colorado Water Quality Control Act required the Division to "determine whether or not any or all of the water quality standard based effluent limitations are reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons, and are in furtherance of the policies set forth in sections 25-8-192 and 25-8-104."

The Colorado Discharge Permit System Regulations, Regulation No. 61, further define this requirement under 61.11 and state: "Where economic, environmental, public health and energy impacts to the public and affected persons have been considered in the classifications and standards setting process, permits written to meet the standards may be presumed to have taken into consideration economic factors unless:

a. A new permit is issued where the discharge was not in existence at the time of the classification and standards rulemaking, or

b. In the case of a continuing discharge, additional information or factors have emerged that were not anticipated or considered at the time of the classification and standards rulemaking."

The evaluation for this permit shows that this is a new facility not in existence at the time of water quality standards rulemaking. However, based on available data, the resulting water quality standard-based effluent limitations are determined to be reasonably related to the economic, environmental, public health, and energy impacts to the public and affected persons. If the permittee disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, the permittee should submit all pertinent information to the Division during the public notice period.

**Lori Mulsoff**
**1/10/2011**

## VIII. REFERENCES

A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0048739.

B. Basic Standards and Methodologies for Surface Water, Regulation No. 31, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 1, 2011.

**C.** Classifications and Numeric Standards for Lower Colorado River Basin, Regulation No. 37, Colorado Department Public Health and Environment, Water Quality Control Commission, effective June 30, 2010.

D. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective August 30, 2010.

E. Regulations for Effluent Limitations, Regulation No. 62, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 30, 2008.

F. Pretreatment Regulations, Regulation No. 63, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective April 01, 2007.

G. Biosolids Regulation, Regulation No. 64, Colorado Department of Public Health and Environment Water Quality Control Commission, effective March 30, 2010.

H. Colorado River Salinity Standards, Regulation No. 39, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective August 30, 1997.

I. Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective April 30, 2010.

J. Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2001.

K. Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 23, 2002.

L. Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2002.

M. The Colorado Mixing Zone Implementation Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 2002.

N. Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Domestic and Industrial Wastewater Treatment Facilities, Water Quality Control Division Policy WQP-20, May 1, 2007.

O. Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Water Quality Control Division Policy WQP-24, March 10, 2008.

P. Regulation Controlling discharges to Storm Sewers, Regulation No. 65, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective May 30, 2008.

Q. Water and Wastewater Facility Operators Certification Requirements, Regulation No. 100, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 30, 2006.

R. Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-23, effective July 3, 2008.

S. Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (WET) Testing, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WPC Program Permits 1, effective September 30, 2010.

## IX. PUBLIC NOTICE COMMENTS

The public notice period was from PN START DATE to PN END DATE. No comments were received during the public notice period.

OR

The public notice period was from PN START DATE to PN END DATE. Comments were received from _____. Topical summaries of the comments and the response of the Division are given below.